

#2

Access DB#

1816410

## SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Sin J. Lu Examiner #: 76060 Date: 3-7-2006  
 Art Unit: 1752 Phone Number 301-2-1333 Serial Number: 10/800,195  
 Mail Box and Bldg/Room Location: 9D60 Results Format Preferred (circle): PAPER DISK E-MAIL  
 (Rem.)

If more than one search is submitted, please prioritize searches in order of need.

\*\*\*\*\*  
 Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Plz. See Bib.

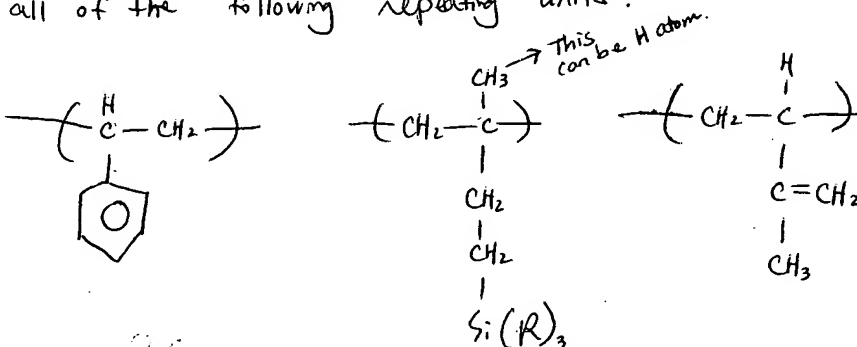
Inventors (please provide full names): \_\_\_\_\_

Earliest Priority Filing Date: \_\_\_\_\_

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Please search for the polymer having

all of the following repeating units:



(R = alkyl gp.)

SCIENTIFIC REFERENCE BR  
 Sci & Tech Inf. Ctr  
 MAR 8 REG  
 Pat. & T.M. Office

## STAFF USE ONLY

## Type of Search

## Vendors and cost where applicable

Searcher: _____	NA Sequence (#) _____	STN _____
Searcher Phone #: _____	AA Sequence (#) _____	Dialog _____
Searcher Location: _____	Structure (#) _____	Questel/Orbit _____
Date Searcher Picked Up: _____	Bibliographic _____	Dr. Link _____
Date Completed: _____	Litigation _____	Lexis/Nexis _____
Searcher Prep & Review Time: _____	Fulltext _____	Sequence Systems _____
Clerical Prep Time: _____	Patent Family _____	WWW/Internet _____
Online Time: _____	Other _____	Other (specify) _____



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Bib Data Sheet

CONFIRMATION NO. 8744

SERIAL NUMBER 10/800,195	FILING DATE 03/12/2004  RULE	CLASS 430	GROUP ART UNIT 1752	ATTORNEY DOCKET NO. 5347.218
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**APPLICANTS**

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Christopher K. Ober, Ithaca, NY;  
Lin Wang, Baton Rouge, LA; Franco Cerrina, Madison, WI;  
Paul Nealey, Madison, WI;

**\*\* CONTINUING DATA \*\*\*\*\***  
 This appln claims benefit of 60/454,062 03/12/2003  
 SJL

**\*\* FOREIGN APPLICATIONS \*\*\*\*\***  
 None SJL

**IF REQUIRED, FOREIGN FILING LICENSE GRANTED**  
**\*\* 05/28/2004**

Foreign Priority claimed <input type="checkbox"/> yes <input checked="" type="checkbox"/> no	STATE OR COUNTRY NY	SHEETS DRAWING 10	TOTAL CLAIMS 64	INDEPENDENT CLAIMS 8
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35 USC 119 (a-d) conditions met  
☐ yes ☐ no ☐ Met after Allowance

Verified and Acknowledged  
 Examiner's Signature: [Signature] Initials: SJL

**ADDRESS**  
 20792  
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 PO BOX 37428  
 RALEIGH, NC  
 27627

**TITLE**  
 Organoelement resists for EUV lithography and methods of making the same

FILING FEE	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT	<input type="checkbox"/> All Fees <input type="checkbox"/> 1.16 Fees ( Filing ) <input type="checkbox"/> 1.17 Fees ( Processing Ext. of time )
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=> file reg

FILE 'REGISTRY' ENTERED AT 16:20:46 ON 09 MAR 2006  
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FILE 'LREGISTRY' ENTERED AT 14:57:43 ON 09 MAR 2006

L1 STR  
L2 STR  
L3 STR

FILE 'REGISTRY' ENTERED AT 15:00:07 ON 09 MAR 2006

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L5 0 S L1 AND L2 AND L3 AND L4  
L6 STR L1  
L7 0 S L6 AND L2 AND L3 AND L4  
L8 10 S L6 AND L2 AND L3 AND L4 FUL  
SAV L8 LEE195/A

FILE 'ZCAPLUS' ENTERED AT 16:20:31 ON 09 MAR 2006

L9 15 S L8

FILE 'REGISTRY' ENTERED AT 16:20:46 ON 09 MAR 2006

=> d l8 que stat

L2 STR

C=C~G1~Si  
1 2 3 4

REP G1=(0-5) C

NODE ATTRIBUTES:

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DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

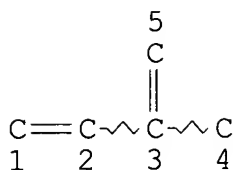
GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 4

STEREO ATTRIBUTES: NONE

L3 STR



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DEFAULT ECLEVEL IS LIMITED

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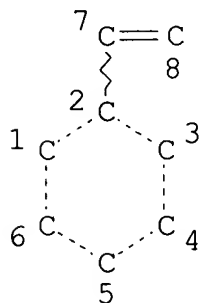
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## STEREO ATTRIBUTES: NONE

L4 SCR 2043

L6 STR



## NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

## GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 8

## STEREO ATTRIBUTES: NONE

L8 10 SEA FILE=REGISTRY SSS FUL L6 AND L2 AND L3 AND L4

100.0% PROCESSED 1350 ITERATIONS

10 ANSWERS

SEARCH TIME: 00.00.01

=&gt; file zcaplus

FILE 'ZCAPLUS' ENTERED AT 16:21:36 ON 09 MAR 2006

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=> d 19 1-15 cbib abs hitstr hitrn

L9 ANSWER 1 OF 15 ZCAPLUS COPYRIGHT 2006 ACS on STN

2003:736259 Document No. 140:358666 Synthesis of modified styrene-butadiene rubber latex containing triethoxysilyl group and its in situ silica filling. Sunada, Kiyoshi; Takeshita, Hiroki; Miya, Masamitsu; Nakamura, Tsukasa; Takenaka, Katsuhiko; Shiomi, Tomoo (Department of Materials Science and Technology, Nagaoka University of Technology, Niigata, Japan). Nippon Gomu Kyokaishi, 76(7), 234-239 (Japanese) 2003. CODEN: NGOKAF. ISSN: 0029-022X. Publisher: Nippon Gomu Kyokai.

AB Triethoxysilyl modified styrene-butadiene rubber latex was synthesized by the emulsion copolymerization of 2-(3-triethoxysilylpropyl)-1,3-butadiene with styrene and 1,3-butadiene. This latex was mixed with unmodified SBR latex and tetraethoxysilane to obtain SBR-silica composites by sol-gel reaction in the latex. Evaluation of mechanical properties demonstrated that tensile modulus and tensile strength, elongation at break improved with increasing of the amount of modified SBR. SEM observation for SBR-silica composites suggested that particle size of silica dispersed in unvulcanized rubber matrix grew larger with decreasing of silica content.

IT **682743-13-1P**, 2-(3-Triethoxysilylpropyl)-1,3-butadiene-styrene-1,3-butadiene copolymer

(rubber; synthesis of modified styrene-butadiene rubber latex containing triethoxysilyl group and its in situ silica filling)

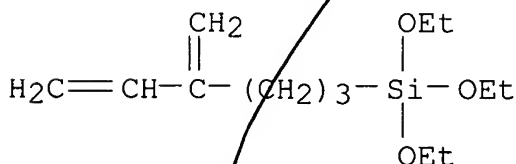
RN 682743-13-1 ZCAPLUS

CN Silane, triethoxy(4-methylene-5-hexenyl)-, polymer with 1,3-butadiene and ethenylbenzene (9CI) (CA INDEX NAME)

CM 1

CRN 682743-12-0

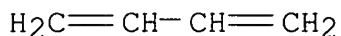
CMF C13 H26 O3 Si



CM 2

CRN 106-99-0

CMF C4 H6



CM 3

CRN 100-42-5

CMF C8 H8



IT **682743-13-1P**, 2-(3-Triethoxysilylpropyl)-1,3-butadiene-styrene-1,3-butadiene copolymer  
(rubber; synthesis of modified styrene-butadiene rubber latex  
contg. triethoxysilyl group and its in situ silica filling)

L9 ANSWER 2 OF 15 ZCAPLUS COPYRIGHT 2006 ACS on STN  
1997:204960 Document No. 126:212478 Model Block-Graft Copolymer via  
Anionic Living Polymerization: Preparation and Characterization of  
[Poly((4-vinylphenyl)dimethylvinylsilane)- graft-polyisoprene]-block-  
polystyrene. Se, Kazunori; Yamazaki, Hiroki; Shibamoto, Takeshi;  
Takano, Atsushi; Fujimoto, Teruo (Department of Materials Science  
and Engineering Faculty of Engineering, Fukui University, Fukui,  
910, Japan). Macromolecules, 30(6), 1570-1576 (English) 1997.  
CODEN: MAMOBX. ISSN: 0024-9297. Publisher: American Chemical  
Society.

AB A model graft copolymer that has well-defined length, no., and  
position of grafts was prepd. via anionic living polymn.  
(4-Vinylphenyl)dimethylvinylsilane (VS) was anionically polyemd. by  
cumylcesium in THF at -78 .degree.C for 20 min under a pressure of  
10-5 mm Hg, and subsequent addn. of styrene (St) yielded a PVS-b-PSt  
block copolymer that could be used as a backbone mol. PVS has a  
silylvinyl group on the side chain that converts chem. links between  
backbone and grafts. Isoprene (Is) was anionically polyemd. to yield  
living polyisoprene, and the resultant PIs-Cs+ and PIs-Li+ solns.  
were added to THF and benzene solns. of PVS-b-PSt, resp. After 24  
h, backbone coupling was terminated to yield [poly((4-  
vinylphenyl)dimethylvinylsilane)-graft-polyisoprene]-block-  
polystyrene. The three graft copolymers were prepd. Mol.  
characterization was carried out by GPC measurement, osmometry, and

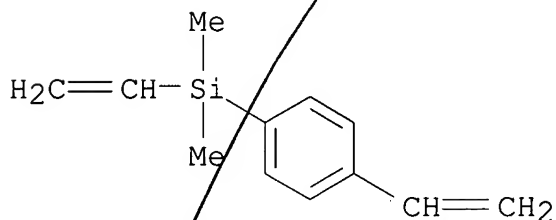
sedimentation pattern. The  $M_n$  and  $M_w/M_n$  values of the backbone, grafts, and graft copolymers were detd. The no. of grafts per backbone mol. was found to be 10.0, 10.9, and 12.5 for the three graft copolymers, and the position of the grafts was set to the end of the backbone mol. Spacing and its distribution of the graft points on a backbone mol. were also discussed. Three benzene-cast films formed clear microphase-sepd. structures, such as spherical and lamellar structures. The compn. dependence on the morphol. of the graft copolymers was found to differ from that of common block copolymers. These results suggest that the apparent vol. fraction of grafts is much larger than the real vol. fraction, because the grafts became crowded in the vicinity of the backbone mol.

IT **112283-86-0P**, Isoprene-styrene-(4-vinylphenyl)dimethylvinylsilane block graft copolymer  
(prepn. and characterization of [poly((4-vinylphenyl)dimethylvinylsilane)- graft-polyisoprene]-block-polystyrene)  
RN 112283-86-0 ZCAPLUS  
CN Silane, ethenyl(4-ethenylphenyl)dimethyl-, polymer with ethenylbenzene and 2-methyl-1,3-butadiene, block, graft (9CI) (CA INDEX NAME)

CM 1

CRN 18053-60-6

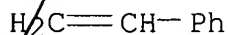
CMF C12 H16 Si



CM 2

CRN 100-42-5

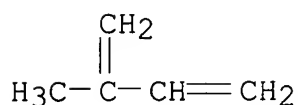
CMF C8 H8



CM 3

CRN 78-79-5

CMF C5 H8



IT **112283-86-0P**, Isoprene-styrene-(4-vinylphenyl)dimethylvinylsilane block graft copolymer (prepn. and characterization of [poly((4-vinylphenyl)dimethylvinylsilane)-graft-polyisoprene]-block-polystyrene)

L9 ANSWER 3 OF 15 ZCAPLUS COPYRIGHT 2006 ACS on STN  
 1996:540295 Document No. 125:196873 Microdomain structures with hyperbolic interfaces in block and graft copolymer. Hasegawa, Hirokazu; Hashimoto, Takeji; Hyde, Stephen T. (Dep. Polymer Chem., Kyoto Univ., Kyoto, 606-01, Japan). Polymer, 37(17), 3825-3833 (English) 1996. CODEN: POLMAG. ISSN: 0032-3861. Publisher: Elsevier.

AB We have investigated a variety of polymer systems contg. block of graft copolymers in order to search for new classes of microphase-sepd. structures other than the 'classical morphologies' such as lamellae, cylinder and spheres. The topol. significance of these novel structures is that their interfaces have curvatures characteristic of hyperbolic surfaces. Systems exhibiting such structures can be divided into two groups; they are (a) polymer mixts. contg. at least one block copolymer (e.g. block copolymer/homopolymer mixts. and block copolymer/block mixts.) and (b) block or graft copolymers with complex mol. architecture (e.g. star-block copolymer, graft-block copolymers, multicomponent multiblock copolymers, etc.).

IT **112283-86-0**, Isoprene-styrene-(4-vinylphenyl)dimethylvinylsilane-block graft copolymer (microdomain structures with hyperbolic interfaces in block and graft copolymer)

RN 112283-86-0 ZCAPLUS

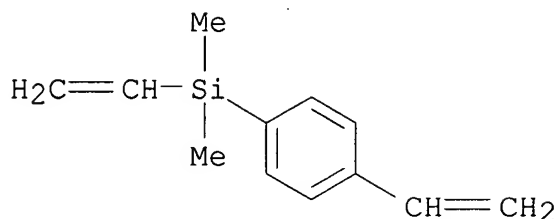
CN Silane, ethenyl(4-ethenylphenyl)dimethyl-, polymer with ethenylbenzene and 2-methyl-1,3-butadiene, block, graft (9CI) (CA INDEX NAME)

CM 1

CRN 18053-60-6



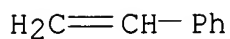
CMF C12 H16 Si



CM 2

CRN 100-42-5

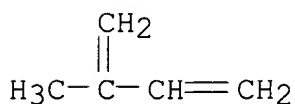
CMF C8 H8



CM 3

CRN 78-79-5

CMF C5 H8



IT **112283-86-0**, Isoprene-styrene-(4-vinylphenyl)dimethylvinylsilane-block graft copolymer  
(microdomain structures with hyperbolic interfaces in block and graft copolymer)

L9 ANSWER 4 OF 15 ZCAPLUS COPYRIGHT 2006 ACS on STN  
1994:300681 Document No. 120:300681 Reactive hot-melt adhesives.  
Kawasaki, Eiichi; Doi, Kyoto; Shinoda, Kazuya; Kitamura, Tadashi;  
Suewaka, Kosuke (Mitsui Toatsu Chemicals, Japan). Jpn. Kokai Tokkyo  
Koho JP 05320608 A2 19931203 Heisei, 18 pp. (Japanese). CODEN:  
JKXXAF. APPLICATION: JP 1992-358021 19921225. PRIORITY: JP  
1991-358710 19911227.

AB The title adhesives having good initial tack and long pot life and curable to give pressure-sensitive adhesives with good

heat-resistant cohesive strength comprise silyl group-contg. graft copolymers and low-mol.-wt. polymers optionally contg. silyl or isocyanate group. A graft copolymer (Mn 53,000) was prepd. by polymg. AS-6 (methacrylate-terminated polystyrene) 35, 2-ethylhexyl acrylate 55, .gamma.-methacryloyloxypropyltrimethoxysilane (I) 10, and Bz2O2 0.2 in toluene 40 parts and mixed in 60:40 solids ratio with a low-mol.-wt. polymer prepd. from Bu acrylate 50, Me methacrylate 30, I 20, and Bz2O2 5 in toluene 100 parts to give an adhesive.

IT **154957-42-3**

(adhesives contg., hot-melt, pressure-sensitive)

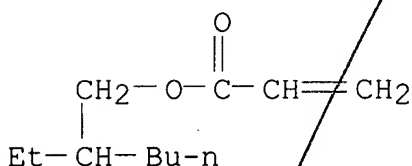
RN 154957-42-3 ZCAPLUS

CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with ethenylbenzene, ethenyltriethoxysilane, 2-ethylhexyl 2-propenoate and 2-methyl-1,3-butadiene, block, graft (9CI) (CA INDEX NAME)

CM 1

CRN 103-11-7

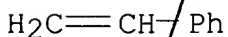
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CM 2

CRN 100-42-5

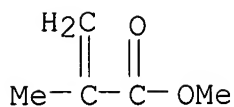
CMF C8 H8



CM 3

CRN 80-62-6

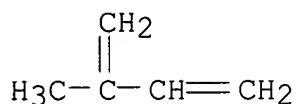
CMF C5 H8 O2



CM 4

CRN 78-79-5

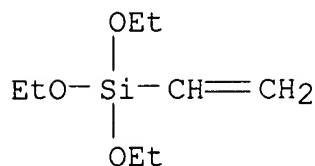
CMF C5 H8



CM . 5

CRN 78-08-0

CMF C8 H18 O3 Si

IT **154957-42-3**

(adhesives contg., hot-melt, pressure-sensitive)

L9 ANSWER 5 OF 15 ZCAPLUS COPYRIGHT 2006 ACS on STN  
 1994:204319 Document No. 120:204319 Hydrosiloxane modified  
 styrene-diene block copolymer resists. Gabor, Allen H.; Lehner,  
 Eric A.; Mao, Guoping; Ober, Christopher K.; Long, Timothy E.;  
 Schell, Brian A.; Tiberio, Richard C. (Dep. Mater. Sci. Eng.,  
 Cornell Univ., Ithaca, NY, 14853, USA). Proceedings of SPIE-The  
 International Society for Optical Engineering, 1925(Advances in  
 Resist Technology and Processing X), 499-506 (English) 1993. CODEN:  
 PSISDG. ISSN: 0277-786X.

AB Styrene-hydrosiloxane modified diene block copolymers have good  
 properties for use as neg. tone, electron sensitive resists.  
 Resoln. better than 0.1 .mu.m, sensitivity of 30 .mu.C/cm2 and  
 contrast of 2.8 are demonstrated using a poly(styrene)-

pentamethyldisiloxane modified poly(isoprene) block copolymer (PS-b-PDPI). Used in a bilayer resist scheme, PS-b-PDI has an oxygen RIE selectivity ratio of 42 with respect to polyimide. A poly(styrene)-heptamethyltrisiloxane modified poly(butadiene) block copolymer (PS-b-HTPB) has an oxygen RIE selectivity ratio of 54 with respect to polyimide. In a bilayer resist system, using PS-b-PDPI as the imageable layer, patterns of 0.3 .mu.m wide lines and 1.5 .mu.m wide spaces are transferred through a 1.2 .mu.m thick polyimide planarizing layer.

IT **153784-66-8**

(lithog. electron-beam resist, characteristics of)

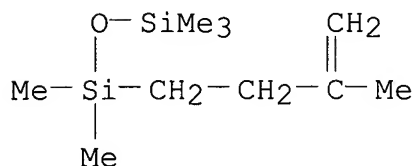
RN 153784-66-8 ZCAPLUS

CN Disiloxane, pentamethyl(2-methyl-3-butenyl)-, polymer with ethenylbenzene, 2-methyl-1,3-butadiene and pentamethyl(3-methyl-3-butenyl)disiloxane (9CI) (CA INDEX NAME)

CM 1

CRN 153524-67-5

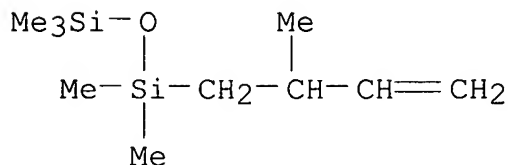
CMF C10 H24 O Si2



CM 2

CRN 14579-68-1

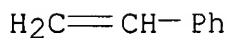
CMF C10 H24 O Si2



CM 3

CRN 100-42-5

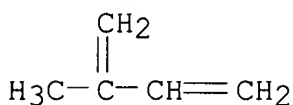
CMF C8 H8



CM 4

CRN 78-79-5

CMF C5 H8

IT **153784-66-8**

(lithog. electron-beam resist, characteristics of)

L9 ANSWER 6 OF 15 ZCAPLUS COPYRIGHT 2006 ACS on STN

1989:154989 Document No. 110:154989 Synthesis and characterization of model block-graft copolymers via anionic polymerization: introduction of poly(isoprene) and poly(ethylene oxide) as graft chains. Se, Kazunori; Watanabe, Osamu; Isono, Yoshinobu; Fujimoto, Teruo (Technol. Univ. Nagaoka, Nagaoka, 940-21, Japan). Makromolekulare Chemie, Macromolecular Symposia, 25(Eur. Symp. Polym. Mater., 1987, Pt. 4), 249-61 (English) 1989. CODEN: MCMSES. ISSN: 0258-0322.

AB Graft-block copolymers exhibiting microphase sepn. were prepd. by anionic block polymn. of 4-vinylphenyldimethylvinylsilane with styrene followed by graft polymn. of isoprene onto the vinylsilane groups. The graft copolymers had continuous phases of polyisoprene chains surrounding rodlike polystyrene domains. Other graft block copolymers were prepd. by anionic block polymn. of styrene with 4-tert-butoxystyrene followed by hydrolysis to remove the Me<sub>3</sub>C group, and, finally, polyaddn. of oxirane. The latter graft copolymers exhibited microphase sepn. consisting of lamellar domains.

IT **112283-86-0P**

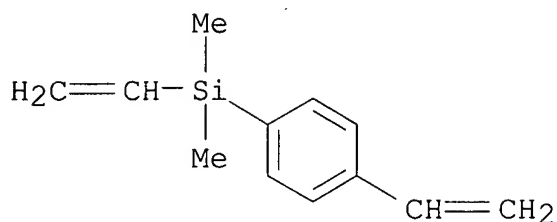
(prepn. and morphol. of)

RN 112283-86-0 ZCAPLUS

CN Silane, ethenyl(4-ethenylphenyl)dimethyl-, polymer with ethenylbenzene and 2-methyl-1,3-butadiene, block, graft (9CI) (CA INDEX NAME)

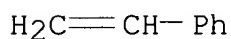
CM 1

CRN 18053-60-6  
CMF C12 H16 Si



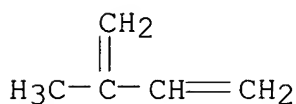
CM 2

CRN 100-42-5  
CMF C8 H8



CM 3

CRN 78-79-5  
CMF C5 H8



IT **112283-86-0P**  
(prepn. and morphol. of)

L9 ANSWER 7 OF 15 ZCAPLUS COPYRIGHT 2006 ACS on STN  
1988:631636 Document No. 109:231636 Preparation of model block-graft copolymers by anionic polymerization: introduction of polyisoprene and poly(dimethylsiloxane) as grafts to polystyrene as backbone chains. Se, K.; Watanabe, O.; Shibamoto, T.; Fujimoto, T. (Dep. Chem., Nagaoka Univ. Technol., Nagaoka, 940-21, Japan). Polymer Preprints (American Chemical Society, Division of Polymer Chemistry), 29(2), 110-11 (English) 1988. CODEN: ACPPAY. ISSN: 0032-3934.

AB Styrene-4-vinylphenyldimethylvinylsilane block copolymer (I) was

prepd. and grafted with polyisopropenyllithium or -cesium to form a block graft terpolymer. I could also be activated with BuLi and grafted with di-Me siloxane units to form a siloxane block graft terpolymer. Lamellar morphol. was noted for both terpolymers.

IT **112283-86-0P**

(prepn. and morphol. of)

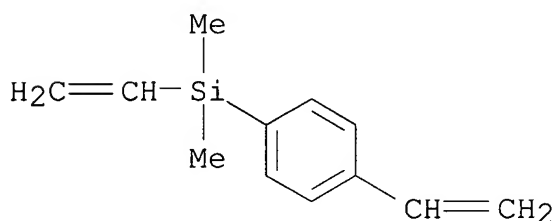
RN 112283-86-0 ZCAPLUS

CN Silane, ethenyl(4-ethenylphenyl)dimethyl-, polymer with ethenylbenzene and 2-methyl-1,3-butadiene, block, graft (9CI) (CA INDEX NAME)

CM 1

CRN 18053-60-6

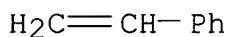
CMF C12 H16 Si



CM 2

CRN 100-42-5

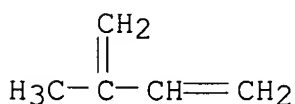
CMF C8 H8



CM 3

CRN 78-79-5

CMF C5 H8



IT **112283-86-0P**  
(prepn. and morphol. of)

L9 ANSWER 8 OF 15 ZCAPLUS COPYRIGHT 2006 ACS on STN  
1988:113177 Document No. 108:113177 Alkenylsilylstyrene block  
copolymers. Fujimoto, Teruo; Shiono, Mikio; Watanabe, Osamu;  
Takano, Atsushi (Shin-Etsu Chemical Industry Co., Ltd., Japan).  
Jpn. Kokai Tokkyo Koho JP 62263214 A2 19871116 Showa, 7 pp.  
(Japanese). CODEN: JKXXAF. APPLICATION: JP 1986-106156 19860509.

AB Block copolymers are prepd. from p-CH<sub>2</sub>:CR<sub>1</sub>C<sub>6</sub>H<sub>4</sub>SiR<sub>2</sub>R<sub>3</sub>(CH<sub>2</sub>)<sub>n</sub>CH:CH<sub>2</sub> and  
CH<sub>2</sub>:CMR<sub>4</sub> by anionic stepwise polymn. in the presence of  
organometallic compds. and tertiary amines, where R<sub>1</sub> = H, Me, Et;  
R<sub>2</sub>, R<sub>3</sub> = C<sub>1</sub>-3 alkyl groups or Ph; n = 0-4; R<sub>4</sub> = H, Me, or Et; M =  
CH:CH<sub>2</sub>, CMe:CH, CO<sub>2</sub>Me, CO<sub>2</sub>Et, and Ph. Styrene-4-vinylphenyldimethyl  
vinylsilane block copolymer was prepd. in the presence of  
cumylcesium and N-methylpyrrolidone.

IT **112283-86-0P**  
(manuf. of)

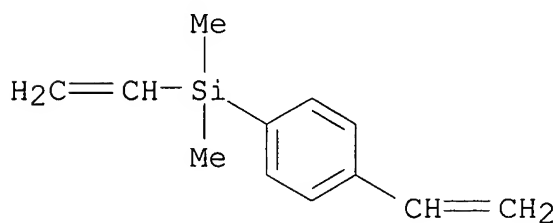
RN 112283-86-0 ZCAPLUS

CN Silane, ethenyl(4-ethenylphenyl)dimethyl-, polymer with  
ethenylbenzene and 2-methyl-1,3-butadiene, block, graft (9CI) (CA  
INDEX NAME)

CM 1

CRN 18053-60-6

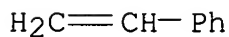
CMF C12 H16 Si



CM 2

CRN 100-42-5

CMF C<sub>8</sub> H<sub>8</sub>

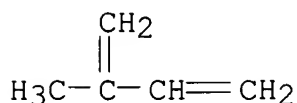




CM 3

CRN 78-79-5

CMF C5 H8



IT **112283-86-0P**  
(manuf. of)

L9 ANSWER 9 OF 15 ZCAPLUS COPYRIGHT 2006 ACS on STN  
1988:38634 Document No. 108:38634 Silicon-containing block graft  
polymer. Fujimoto, Teruo; Shiono, Mikio; Watanabe, Osamu; Ito,  
Koichi (Shin-Etsu Chemical Industry Co., Ltd., Japan). Jpn. Kokai  
Tokkyo Koho JP 62225513 A2 19871003 Showa, 9 pp. (Japanese).  
CODEN: JKXXAF. APPLICATION: JP 1986-69366 19860326.

AB The copolymers [CH<sub>2</sub>CR<sub>1</sub>[C<sub>6</sub>H<sub>4</sub>SiR<sub>2</sub>R<sub>3</sub>(CH<sub>2</sub>)<sub>m</sub>CH<sub>2</sub>CH<sub>2</sub>A-p)]]<sub>x</sub> [R<sub>1</sub> = H, Me,  
Et; R<sub>2</sub>, R<sub>3</sub> = alkyl, Ph; , m = 0-4, A = (SiR<sub>4</sub>R<sub>4</sub>O)<sub>n</sub>R<sub>5</sub> (R<sub>4</sub> = Me, Et, Ph;  
R<sub>5</sub> = R<sub>4</sub>, SiR<sub>4</sub>3; n = 1-1000), (CR<sub>6</sub>QCH<sub>2</sub>)<sub>n</sub>Y (R<sub>6</sub> = H, Me; Q = CO<sub>2</sub>R<sub>2</sub>,  
p-C<sub>6</sub>H<sub>4</sub>CH<sub>2</sub>NMe<sub>2</sub>, C<sub>5</sub>H<sub>4</sub>N, CH:CH<sub>2</sub>, CMe:CH<sub>2</sub>; Y = cumyl, Bu, sec-Bu,  
pentylphenyl), (CH<sub>2</sub>CMe:CHCH<sub>2</sub>)<sub>n</sub>Y, (CH<sub>2</sub>CR<sub>7</sub>M) (R<sub>7</sub> = H, Me, Et; M =  
CH:CH<sub>2</sub>, CMe:CH<sub>2</sub>, CO<sub>2</sub>Me, CO<sub>2</sub>Et, Ph)] are prepd. The polymers consist  
of block main chains and grafted side chains, have fine microsepn.,  
and are useful as O-enriching membranes and biomedical materials. A  
butadiene-(4-vinylphenyl)dimethylvinylsilane-styrene block polymer  
(20:42:38) was grafted with Me methacrylate.

IT **112283-86-0P**  
(prepn. of)

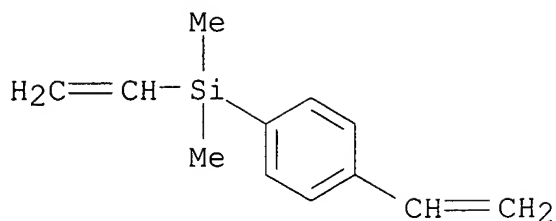
RN 112283-86-0 ZCAPLUS

CN Silane, ethenyl(4-ethenylphenyl)dimethyl-, polymer with  
ethenylbenzene and 2-methyl-1,3-butadiene, block, graft (9CI) (CA  
INDEX NAME)

CM 1

CRN 18053-60-6

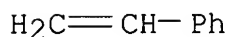
CMF C12 H16 Si



CM 2

CRN 100-42-5

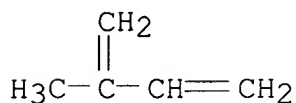
CMF C8 H8



CM 3

CRN 78-79-5

CMF C5 H8



IT **112283-86-0P**  
(prepn. of)

L9 ANSWER 10 OF 15 ZCAPLUS COPYRIGHT 2006 ACS on STN  
1986:573269 Document No. 105:173269 Polymers of substituted  
1,3-butadiene compounds. Sato, Fumie; Nakahama, Seiichi; Hirao,  
Akira; Miyamoto, Misao; Osawa, Kenichi; Ishii, Toshihiro (Nissan  
Motor Co., Ltd., Japan). Eur. Pat. Appl. EP 189174 A1 19860730, 7  
pp. DESIGNATED STATES: R: BE, CH, DE, FR, GB, IT, LI, NL, SE.  
(English). CODEN: EPXXDW. APPLICATION: EP 1986-100763 19860121.  
PRIORITY: JP 1985-10307 19850123; JP 1985-10308 19850123; JP  
1985-111937 19850524.

AB Polymers prepd. from butadiene derivs. XCH: CX1CH:CH2 (X and X1 = H  
or SiRR1R2 with R, R1, and R2 = H, lower alkyl, or lower alkoxy;  
.gtoreq.1 of X and X1 = SiRR1R2; R, R1, and R2 are not all alkyl) by  
radical, anionic, or cationic polymn. are useful as initiators for

the prepn. of living block copolymers, for covulcanization in rubber compns., as impact improvers in polymers, etc. Thus, 5.22 g 2-trimethoxysilyl-1,3-butadiene was polymd. 10 h at 60.degree. in the presence of 0.03 g azobisisobutyronitrile to give a polymer having wt.-av. mol. wt. 5,200 and glass transition temp. -43.degree..

IT **104955-53-5P**

(prepn. and characterization of)

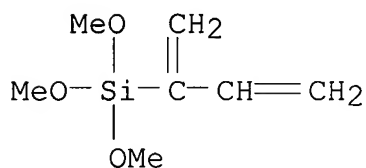
RN 104955-53-5 ZCAPLUS

CN Silane, trimethoxy(1-methylene-2-propenyl)-, polymer with 2-methyl-1,3-butadiene and (1-methylethenyl)benzene (9CI) (CA INDEX NAME)

CM 1

CRN 93830-52-5

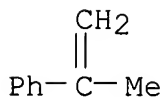
CMF C7 H14 O3 Si



CM 2

CRN 98-83-9

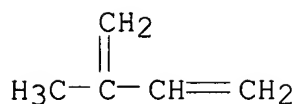
CMF C9 H10



CM 3

CRN 78-79-5

CMF C5 H8

IT **104955-53-5P**

(prepn. and characterization of)

L9 ANSWER 11 OF 15 ZCAPLUS COPYRIGHT 2006 ACS on STN

1983:406216 Document No. 99:6216 Film-forming copolymers. (Kobunshi Oyo Gijutsu Kenkyu Kumiai, Japan). Jpn. Kokai Tokkyo Koho JP 58001711 A2 19830107 Showa, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1981-99668 19810629.

AB Copolymers forming films with selective permeability (e.g., O/N permeation ratio 3.0) were prepd. from allyltrimethylsilane (I) and isoprene and optionally styrene. Thus, 5.7 g I and 3.4 g isoprene were copolymd. in the presence of Bz2O2, Et3Al, and TiCl4 in hexane in a sealed glass reactor at -20.degree. for 140 h to give 3.6 g copolymer [81272-85-7] of 48 mol% I.

IT **81272-83-5P**

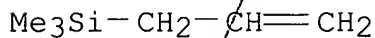
(manuf. of, for semipermeable membrane)

RN 81272-83-5 ZCAPLUS

CN Silane, trimethyl-2-propenyl-, polymer with ethenylbenzene and 2-methyl-1,3-butadiene (9CI) (CA INDEX NAME)

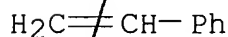
CM 1

CRN 762-72-1  
CMF C6 H14 Si

*allyl*

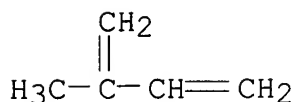
CM 2

CRN 100-42-5  
CMF C8 H8



CM 3

CRN 78-79-5  
CMF C5 H8



IT **81272-83-5P**  
(manuf. of, for semipermeable membrane)

L9 ANSWER 12 OF 15 ZCAPLUS COPYRIGHT 2006 ACS on STN  
1982:143552 Document No. 96:143552 Silicon-containing copolymer,  
ultrathin solid membrane composed thereof and its use for  
concentrating a gas. Sugie, Kiyoshi; Yamada, Takeyoshi; Yamaji,  
Teizo (Teijin Ltd. , Japan). Eur. Pat. Appl. EP 41839 A1 19811216,  
62 pp. DESIGNATED STATES: R: DE, FR, GB, NL. (English). CODEN:  
EPXXDW. APPLICATION: EP 1981-302493 19810604. PRIORITY: JP  
1980-74860 19800605; JP 1981-58443 19810420.

AB Allyltrihydrocarbylsilanes are copolymd. with vinyl monomers and  
optionally alkadienes, giving products useful as ultrathin membranes  
for concg. gases in mixts., e.g., for producing an O-enriched gas  
from air. Thus,  $\text{CH}_2\text{:CHCH}_2\text{SiMe}_3$  was copolymd. with 4-methylheptene  
in soln. using a  $\text{TiCl}_4\text{-Et}_3\text{Al}$  catalyst. The product [81272-78-8]  
was fractionated, and the fraction contg. 38 mol% silane monomer and  
having inherent viscosity 2.09 (0.5 g/100 mL, cyclohexene,  
25.degree.) was fabricated into an ultrathin membrane by spreading a  
droplet of polymer soln. on a water surface and removing the layer  
using a porous polypropylene support. The process was repeated to  
give a composite membrane with 2 silane polymer membranes on the  
polypropylene membrane. The O permeation factor for the composite  
membrane was 5.4 .times.  $10^{-4}$  cm<sup>3</sup>/cm<sup>2</sup>-s-cm Hg, and the ratio of the  
O permeation factor to the N permeation factor was 3.7.

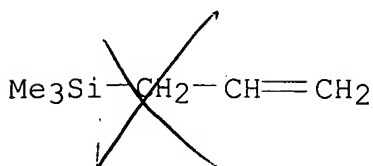
IT **81272-83-5**  
(ultrathin membranes of, for oxygen-enriched gas prodn.)

RN 81272-83-5 ZCAPLUS

CN Silane, trimethyl-2-propenyl-, polymer with ethenylbenzene and  
2-methyl-1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 762-72-1  
CMF C6 H14 Si

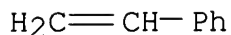


→ allyl.

CM 2

CRN 100-42-5

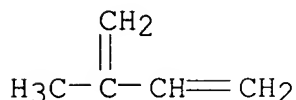
CMF C8 H8



CM 3

CRN 78-79-5

CMF C5 H8

IT **81272-83-5**

(ultrathin membranes of, for oxygen-enriched gas prodn.)

L9 ANSWER 13 OF 15 ZCAPLUS COPYRIGHT 2006 ACS on STN

1974:464054 Document No. 81:64054 Polymerization and copolymerization of 1-triethylgermyl-1,3-butadiene with styrene and methylmethacrylate. Makarov, K. A.; Solov'eva, T. K.; Nikolaev, A. F. (Leningr. Tekhnol. Inst. im. Lensoveta, Leningrad, USSR). Vysokomolekulyarnye Soedineniya, Seriya A, 16(1), 3-8 (Russian) 1974. CODEN: VYSAAF. ISSN: 0507-5475.

AB Poly(1-triethylgermyl)-1,3-butadiene] (I) [51807-15-9] and the copolymers of 1-triethylgermyl)-1,3-butadiene, 1-triethylsilyl)-1,3-butadiene, 1-triethylstannyl)-1,3-butadiene, 1-tert-butyl-1,3-butadiene, and and 3-methyl-1-(triethylsilyl)-1,3-butadiene with styrene or Me methacrylate were prepd., and the corresponding monomer reactivity ratios, Q-e values, and the propagation rate consts. (k<sub>11</sub>, k<sub>12</sub>, etc.) in Bz<sub>2</sub>O<sub>2</sub>-initiated polymerizations were compared. The reactivity of the dienes decreased in the sequence: in homopolymns. Si>Ge>C>Sn, and in copolymns. >Si>Ge>Sn. The predominant role in detg. monomer reactivities was ascribed to the d.pi.-p.pi. conjugation.

IT **51960-82-8P**

(formation of, monomer reactivities in)

RN 51960-82-8 ZCAPLUS

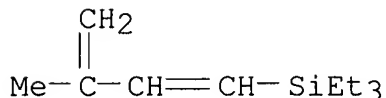
CN Benzene, ethenyl-, polymer with triethyl(3-methyl-1,3-

butadienyl)silane (9CI) (CA INDEX NAME)

CM 1

CRN 1112-73-8

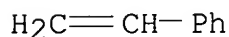
CMF C11 H22 Si



CM 2

CRN 100-42-5

CMF C8 H8



IT **51960-82-8P**

(formation of, monomer reactivities in)

= G B 1229066

L9 ANSWER 14 OF 15 ZCAPLUS COPYRIGHT 2006 ACS on STN

1971:530634 Document No. 75:130634 Elastomeric block copolymers.

Nametkin, N. S.; Durgar'yan, S. G.; Solov'ev, E. V.; Piryatinskii, V. M. (Topchiev, A. V., Institute of Petrochemical Synthesis). Fr. FR 2041501 19710129, 14 pp. (French). CODEN: FRXXAK. APPLICATION: FR 19690428.

AB Vinyltriorganosilane block copolymers of the ABA type having glass temp. of 50-180.degree. were prepd. by the anionic block copolymn. of conjugated dienes with vinyltriorganosilanes in the presence of Li catalyst. Vinyltrimethylsilane (I) was polymd. with sec-BuLi in cyclohexane to give poly(vinyltrimethylsilane) which was copolymd. with isoprene and I successively to give poly(vinyltrimethylsilane)-isoprene block copolymer. Vinylphenyldimethylsilane (II) was copolymd. with styrene in the presence of BuLi, polymd. with isoprene, and the block copolymer mixed with styrene and polymd. to give ABA block copolymer where A is II-styrene copolymer and B is isoprene. Coupling agents such as H<sub>2</sub>MeSiPh may be added to the living chain of the intermediate block copolymer after the addn. of the diene.

IT **31587-32-3P**, preparation **32763-07-8P**, preparation

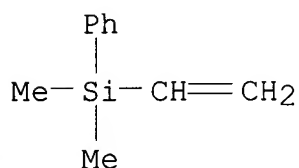
**32874-10-5P**

(block, rubber, manuf. of, catalysts for)

RN 31587-32-3 ZCAPLUS  
CN Silane, dimethylphenylvinyl-, polymer with isoprene and styrene  
(8CI) (CA INDEX NAME)

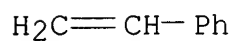
CM 1

CRN 1125-26-4  
CMF C10 H14 Si



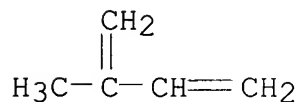
CM 2

CRN 100-42-5  
CMF C8 H8



CM 3

CRN 78-79-5  
CMF C5 H8

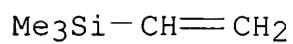


RN 32763-07-8 ZCAPLUS  
CN Silane, trimethylvinyl-, polymer with isoprene and styrene (8CI)  
(CA INDEX NAME)

CM 1

CRN 754-05-2  
CMF C5 H12 Si

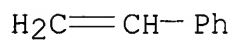




CM 2

CRN 100-42-5

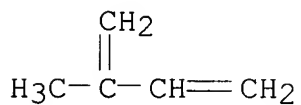
CMF C8 H8



CM 3

CRN 78-79-5

CMF C5 H8



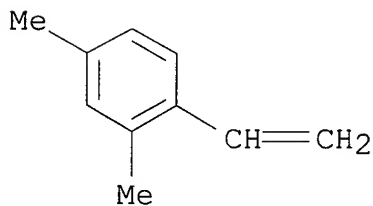
RN 32874-10-5 ZCAPLUS

CN Silane, dimethylphenylvinyl-, polymer with 2,4-dimethylstyrene and isoprene (8CI) (CA INDEX NAME)

CM 1

CRN 2234-20-0

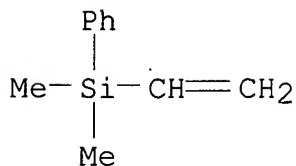
CMF C10 H12



CM 2

CRN 1125-26-4

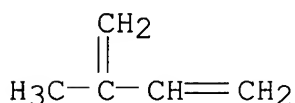
CMF C10 H14 Si



CM 3

CRN 78-79-5

CMF C5 H8



IT **31587-32-3P**, preparation **32763-07-8P**, preparation  
**32874-10-5P**  
 (block, rubber, manuf. of, catalysts for)

L9 ANSWER 15 OF 15 ZCAPLUS COPYRIGHT 2006 ACS on STN  
 1971:422161 Document No. 75:22161 Elastomeric block copolymers.  
 (Topchiev, A.V., Institute of Petrochemical Synthesis). Brit. GB  
 1229066 19710421, 6 pp. (English). CODEN: BRXXAA. APPLICATION: GB  
 1969-1229066 19690408.

AB Block copolymer elastomers with use temp. 50-180.degree. were prepd.  
 by block copolymn. of CH<sub>2</sub>:CHRMe<sub>2</sub>Si (I, R = Me, Bu, Ph, or Et) with  
 isoprene and/or styrene or 2,4-dimethylstyrene in the presence of Li  
 or an organolithium, optionally in the presence of an organosilane  
 coupling agent. Thus, a mixt. contg. a 15:24 (mole ratio) I-styrene  
 mixt., BuLi, and heptane was heated at 40.degree. until complete  
 conversion to give a copolymer with an intrinsic viscosity 0.29 dl/g  
 (20.degree., cyclohexane). An isoprene-heptane soln. was mixed with  
 the above reaction mixt. at 35.degree. until complete conversion to  
 give a block copolymer contg. 14.1 wt. I. A 15:24 (mole ratio)  
 I-styrene mixt. in heptane was mixed with the block copolymer at  
 40.degree. until complete conversion to give a copolymer with a 0.89  
 dl/g intrinsic viscosity and contg. 20.9 wt. I. Coupling agents  
 methylphenylsilane, bis(hydroxydiethylsilyl)methane, and  
 p-bis[bromo(methyl)ethylsilyl]-benzene were used in some of the  
 block copolymers.

IT **31587-32-3P**, preparation **32763-07-8P**, preparation

**32874-10-5P**

(block, rubber, manuf. of, catalysts for)

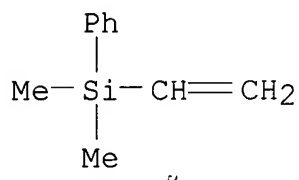
RN 31587-32-3 ZCAPLUS

CN Silane, dimethylphenylvinyl-, polymer with isoprene and styrene  
(8CI) (CA INDEX NAME)

CM 1

CRN 1125-26-4

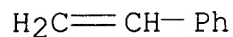
CMF C10 H14 Si



CM 2

CRN 100-42-5

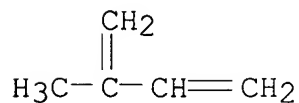
CMF C8 H8



CM 3

CRN 78-79-5

CMF C5 H8



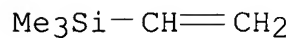
RN 32763-07-8 ZCAPLUS

CN Silane, trimethylvinyl-, polymer with isoprene and styrene (8CI)  
(CA INDEX NAME)

CM 1

CRN 754-05-2

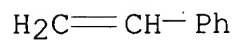
CMF C5 H12 Si



CM 2

CRN 100-42-5

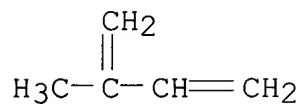
CMF C8 H8



CM 3

CRN 78-79-5

CMF C5 H8



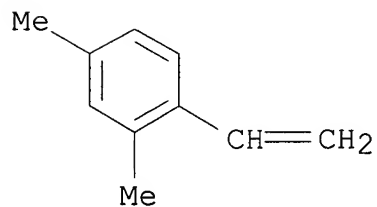
RN 32874-10-5 ZCAPLUS

CN Silane, dimethylphenylvinyl-, polymer with 2,4-dimethylstyrene and isoprene (8CI) (CA INDEX NAME)

CM 1

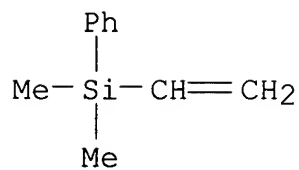
CRN 2234-20-0

CMF C10 H12



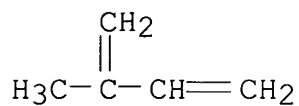
CM 2

CRN 1125-26-4  
CMF C10 H14 Si



CM 3

CRN 78-79-5  
CMF C5 H8



IT **31587-32-3P**, preparation **32763-07-8P**, preparation  
**32874-10-5P**  
(block, rubber, manuf. of, catalysts for)